

## LSM-E Series Datasheet

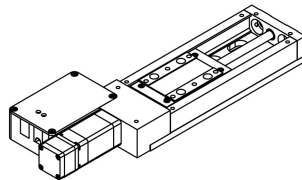
- Hardened steel construction and integrated recirculating ball bearing guide provide exceptional stiffness and thermal stability
- 25, 50, 100, 150, 200 mm travel
- Up to 8  $\mu\text{m}$  accuracy and 50 nm resolution
- Encoder position feedback with slip/stall detection and automatic recovery
- 50 kg load capacity
- Designed for use with a X-MCB1 Series stepper motor controller or any 2-phase stepper motor controller

Zaber's LSM-E Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a very compact size. They are designed to be used with our X-MCB1 controller, or with any 2-phase stepper motor controller.

The built-in motor encoder allows closed-loop operation and slip/stall recovery features. At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The LSM-E's innovative design allows speeds up to 104 mm/s and loads up to 10 kg. Like all of Zaber's products, the LSM-E Series is designed to be 'plug and play' and very easy to set up and operate when used with our X-series controller. The stages can be mounted in XY and XYZ configurations with no additional hardware.

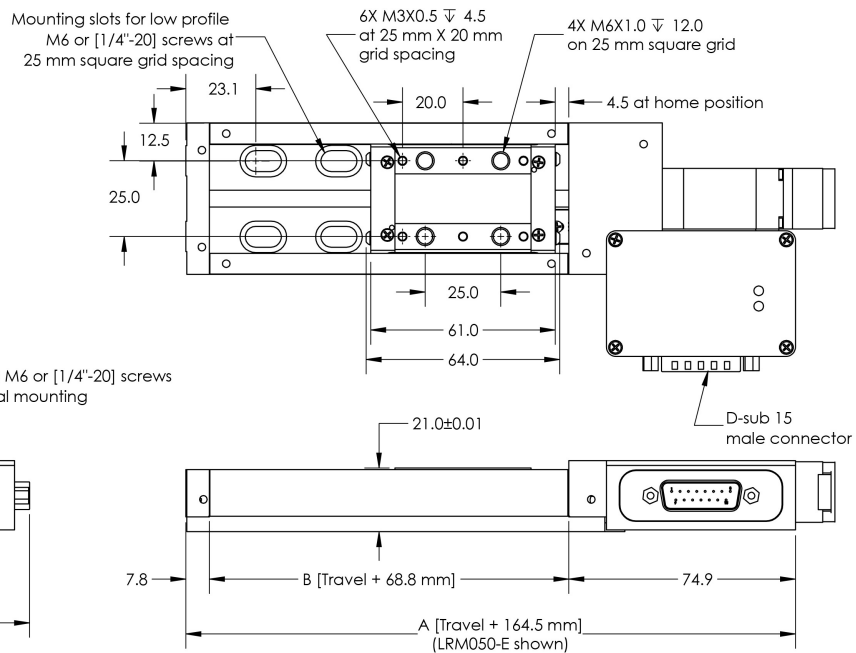
## Drawings

**ZABER**  
 LRM-E Motorized Linear Stage  
 dimensions in mm



Model Number*	Travel	A	B
LRM025-E	25.0	189.5	93.8
LRM050-E	50.0	214.5	118.8
LRM100-E	100.0	264.5	168.8
LRM150-E	150.0	314.5	218.8
LRM200-E	200.0	364.5	268.8

\*See product page for complete list of available models at [www.zaber.com](http://www.zaber.com)



DWG 1464 R01A

## Specifications

Specification	Value	Alternate Unit
Built-in Controller	No	
Recommended Controller	X-MCB1 (48 V) Recommended	
Encoder Resolution	200 CPR	800 states/rev
Encoder Type	Rotary quadrature encoder	
Maximum Continuous Thrust	25 N	5.6 lb
Maximum Centered Load	500 N	112.1 lb
Maximum Cantilever Load	1500 N-cm	2124.2 oz-in
Guide Type	Recirculating ball bearing	
Vertical Runout	< 8 $\mu\text{m}$	< 0.000315 "
Horizontal Runout	< 12 $\mu\text{m}$	< 0.000472 "
Pitch	0.02 °	0.349 mrad
Stiffness in Pitch	750 N-m/°	23 $\mu\text{rad/N-m}$
Roll	0.02 °	0.349 mrad
Stiffness in Roll	550 N-m/°	32 $\mu\text{rad/N-m}$
Yaw	0.02 °	0.349 mrad
Stiffness in Yaw	400 N-m/°	44 $\mu\text{rad/N-m}$
Motor Steps Per Rev	200	
Motor Type	Stepper (2 phase)	
Motor Rated Current	600 mA/phase	
Motor Winding Resistance	6.5 ohms/phase	
Inductance	3.5 mH/phase	
Motor Rated Power	6.9 Watts	
Motor Rotor Inertia	2.9 g-cm <sup>2</sup>	
Motor Connection	D-sub 15	
Motor Frame Size	NEMA 08	
Mechanical Drive System	Precision lead screw	
Limit or Home Sensing	Magnetic hall sensor	
Axes of Motion	1	
Mounting Interface	M3 and M6 threaded holes	
Vacuum Compatible	No	

Specification	Value	Alternate Unit
Operating Temperature Range	0 to 50 °C	
Stage Parallelism	< 10 µm	< 0.000394 "
RoHS Compliant	Yes	
CE Compliant	Yes	

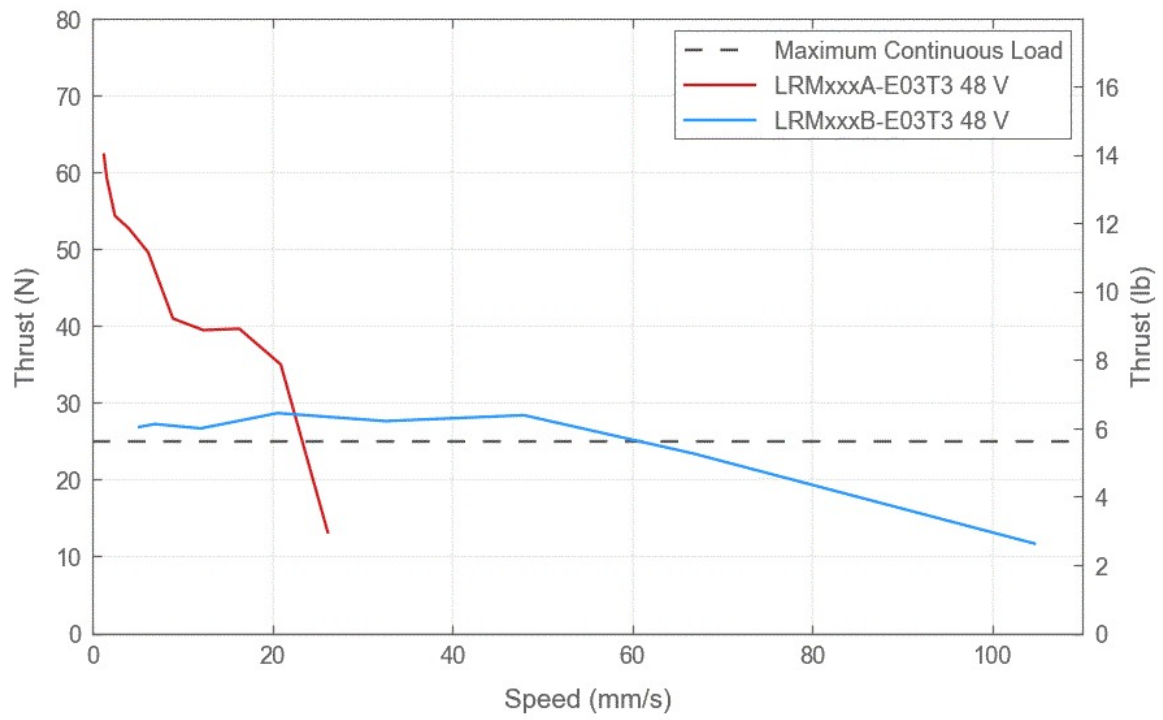
Part Number	Microstep Size (Default Resolution)	Travel Range	Accuracy (unidirectional)	Repeatability
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Part Number	Backlash	Maximum Speed	Minimum Speed	Speed Resolution
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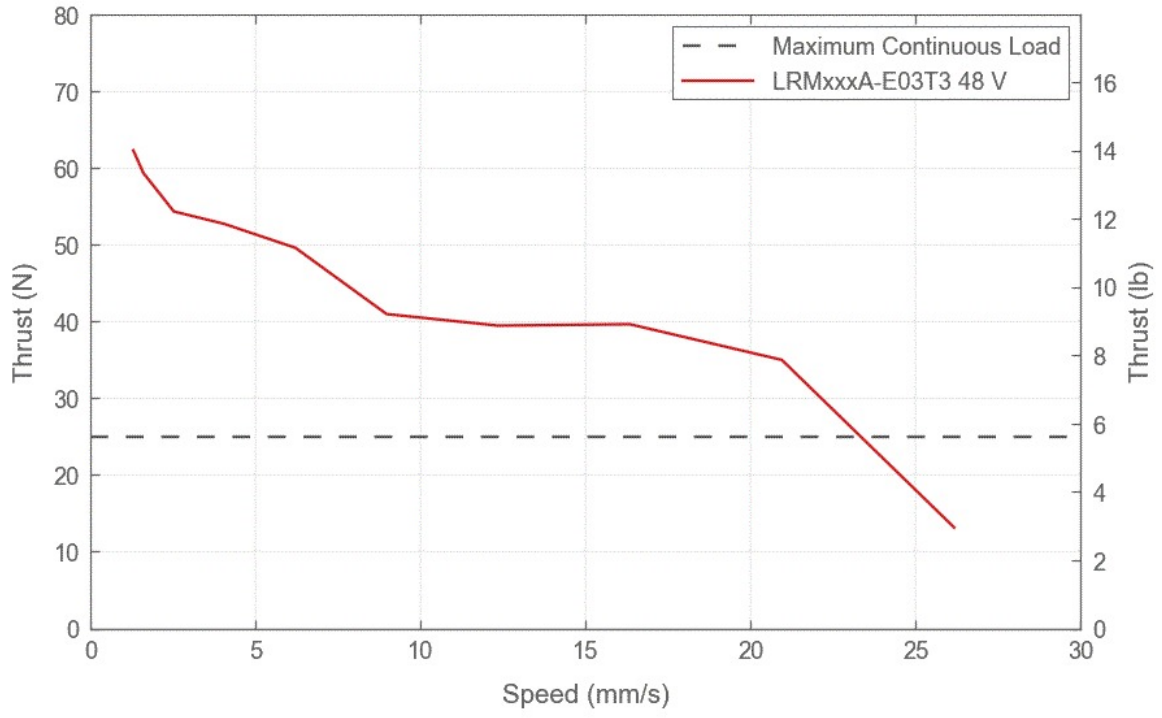
Part Number	Peak Thrust	Linear Motion Per Motor Rev	Weight
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# Charts

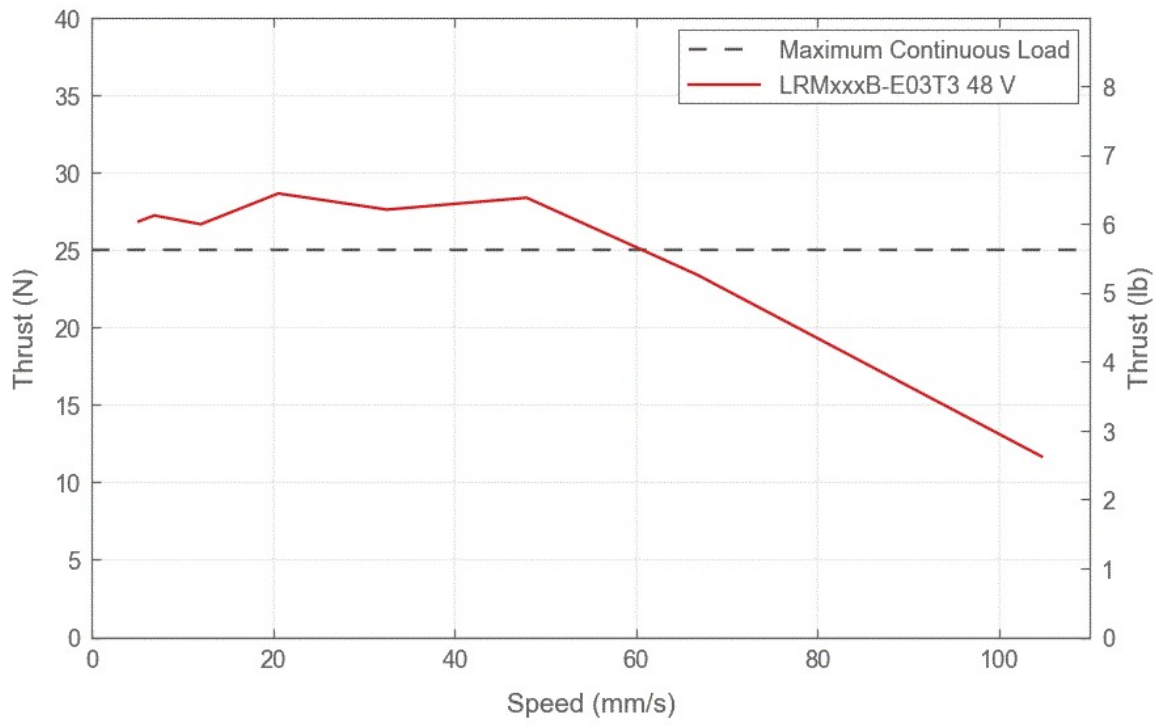
## Thrust Speed Performance



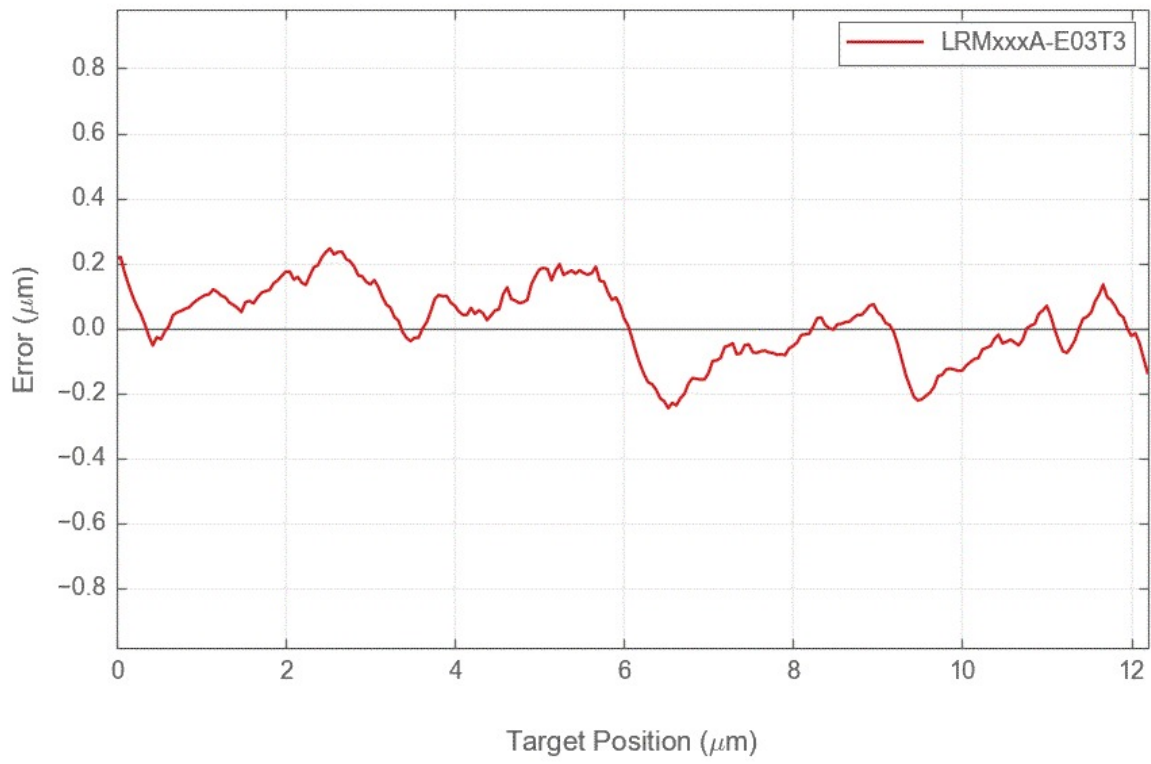
### Thrust Speed Performance



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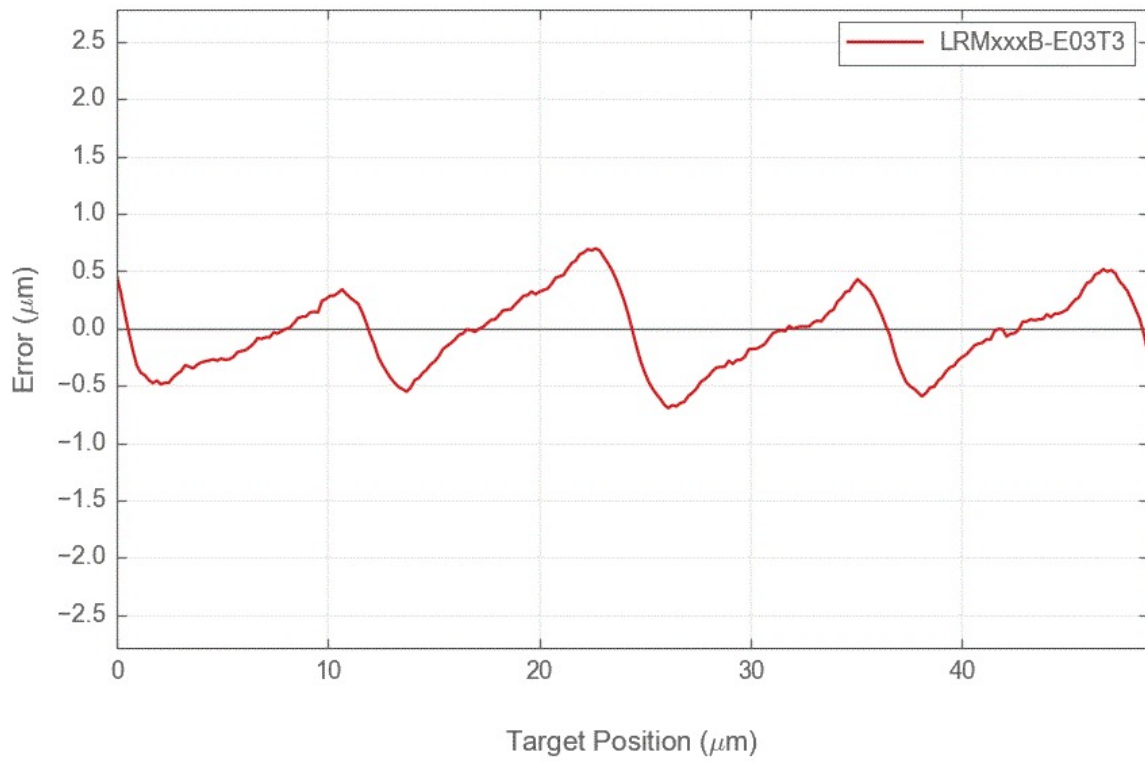


## Typical Microstepping Accuracy





## Typical Microstepping Accuracy



### LRM Linear Bearing Lifetime

